**“Investing in Today’s Market”**

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Can the most popular form of financial capitalism be “worse than Marxism”? That was the provocative question posed not long ago by an indisputably capitalist researcher at one of the world’s leading investment firms.

Inigo Fraser-Jenkins, head of quantitative strategy at Sanford C. Bernstein in London, called index funds “the silent road to serfdom” in a research report two years ago.[[1]](#footnote-1)

To understand why he raised this concern, let’s define some terms.

“Active funds” are portfolios selected by managers who attempt to choose the best, and avoid the worst, investments in the stock or bond markets. Such bundles of securities are assembled using individual human judgments -- extensive research on a company, its products, its management, its financial strength, and so on. They tend to hold stocks for only about a year at a time, so they incur high costs to research and trade the portfolio.

“Index” or “passive” funds are mechanical replicas of a market index like the S&P 500 or the Dow Jones Industrial Average. The typical index-fund manager doesn’t seek to pick winners and avoid losers. The fund isn’t “managed” at all, in the conventional sense: It simply owns all the securities in a market average in the same proportion as their representation in the index itself. It doesn’t buy more of a particular security when prospects look good or sell when things look grim. An index fund holds everything indefinitely, keeping its fees extremely low.[[2]](#footnote-2)

Paradoxically, seeking to match the market has produced better investment results than seeking to beat the market. Although many active managers outperform the market averages before fees, very few earn higher returns after fees -- precisely because seeking to beat the market is expensive. Active stock funds charge about 0.8% in annual management fees, or about $80 on a $10,000 investment. Index funds charge about 0.1%, or only about $10 per $10,000 invested.[[3]](#footnote-3)

Furthermore, regression to the mean is a powerful force in finance. The investment-management business -- the second-most-profitable industry in the U.S., with an average net profit margin of 24.1%, exceeded only by tobacco companies[[4]](#footnote-4) -- attracts the brightest and most ambitious people. They all have superior research and analytical skills, instantaneous access to information, and the best databases and computer models. They are among the most highly skilled people on earth.

Because they are all so good at what they do, it is extraordinarily difficult for any of them to beat the others at it. That leads to what investment strategist Michael Mauboussin has called “the paradox of skill”: When extremely skilled people compete intensely against each other, what often separates the top from the bottom performers in such a group is not their skill at all, but sheer luck.[[5]](#footnote-5)

Furthermore, the most successful companies in the past often are not the best bets for the future. And an active fund that does beat the market will rapidly attract a flood of new money from investors, making it hard for the fund to invest flexibly; it is much easier to invest a few hundred million dollars than it is to invest many billions. So, the better a fund’s stocks have performed in the recent past, and the better the fund’s own recent returns as a result, the likelier its performance is to regress to the mean.

Rigorous academic studies dating back to the 1920s have consistently found that active managers tend to fall behind the market averages and that even when they do outperform, their superiority doesn’t persist.[[6]](#footnote-6) The leader in one time period tends to be the laggard in the next. Recent research has begun to question these findings,[[7]](#footnote-7) but it relies on so few exceptions and highlights such pallid levels of outperformance that, so far at least, it remains unpersuasive.

In recent years, the verdict of the marketplace has been decisive: Investors are abandoning active funds in favor of indexing. Over the past decade, investors have withdrawn $600 billion from actively managed stock and bond funds and added $2.8 trillion to passively managed portfolios.[[8]](#footnote-8) It is no exaggeration to call this the largest investment migration in history.

Are the pilgrims misguided? Is this newest manifestation of financial capitalism somehow worse than Marxism?

Mr. Fraser-Jenkins of Sanford C. Bernstein argues that index funds will disrupt the mechanism by which active stockpickers identify the most promising companies of the future and shun those that aren’t. If indexing crowds out active management, who will separate the wheat from the chaff? One of the most important functions of financial capitalism is not only to create a marketplace for entrepreneurship, but to discipline it by rewarding the best and punishing the worst new companies. As Mr. Fraser-Jenkins writes:

“a process of planning of capital allocation in a Marxist society could...be superior to a largely passive regime where the capital allocation is done by a marginal participant based on past performance and without any regard to industry dynamics or deviations from fair value.”[[9]](#footnote-9)

Because index funds are, by definition, agnostic about which investments are best or worst, they are *marginal* rather than *fundamental* participants in the market. They do not set prices; they merely accept them.

Mr. Fraser-Jenkins argues that index funds are displacing human judgment and will ultimately cause capital to be misallocated. Instead of money flowing to the most promising new companies whose stocks offer the best value for investors, it will inundate whichever companies have had the hottest recent returns. The winners will take all, and unproven but potentially profitable companies will be starved of capital. The result will be a fundamental distortion of financial markets, in which no one is willing to do the original research necessary to determine whether an untested young company is worth investing in. The next Amazon, the next Google, the next Genentech, might not get funded.

“You need a deep market of active investors willing to take a view on the valuation of the company,” Mr. Fraser-Jenkins told me in 2016.[[10]](#footnote-10)

This critique, I believe, misses the target. Index funds can invest only in securities that are already included in a market index. Initial public offerings [IPOs], by which companies first offer their stock to any investor willing to buy, consist of companies that are not yet included in a market index. Passively managed funds cannot misallocate to overvalued companies considering an IPO, because the companies’ shares are not publicly traded and thus not eligible for inclusion in index funds. They can, and do, buy after the IPO enables a company to be added to a market index -- but, by that point, the price of that company’s stock has already been set by *active* investors.

While no one should dispute that the free market sets mostly correct prices most of the time, the wisdom of the crowd is not always so wise. If the views of millions of investors are to determine prices in an optimal way, markets must foster several features: *diversity*, or independence of viewpoints; *aggregation*, or mechanisms by which differing views can be brought together and resolved; and *incentives*, through which those investors who are right can be rewarded.[[11]](#footnote-11)

Financial markets, by their very design, are generally efficient at providing aggregation and incentives. However, as Friedrich von Hayek noted in his classic article “The Use of Knowledge in Society” (1945), diversity is the key to the effectiveness of markets, precisely because information is unevenly dispersed:

...the “data” from which the economic calculus starts are never for the whole society “given” to a single mind which could work out the implications, and can never be so given.

...the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess. The economic problem of society is thus...how to secure the best use of resources known to any of the members of society, for ends whose relative importance only these individuals know. Or, to put it briefly, it is a problem of the utilization of knowledge which is not given to anyone in its totality.[[12]](#footnote-12)

In a world of “constant small changes,” Hayek argued, “the very important but unorganized...knowledge of the particular circumstances of time and place” is essential if markets are to determine prices rationally. The primary function of public markets, in fact, is to organize and reward that knowledge.

What happens, though, when that knowledge is already organized in a *private* market for information? By “private,” I mean a limited market that is sheltered from the full force of open competition and public trading. Public markets are wide and deep, with millions of investors continuously repricing securities to account for the latest developments. Private markets are narrow and shallow, with dozens or hundreds of investors generally repricing only a few times a year; while their views can differ drastically, the lack of continuous trading prevents the private market from reconciling those differences in a single unified price.[[13]](#footnote-13)

The number of companies trading publicly on stock exchanges has been steadily declining for decades, and companies are deliberately choosing to stay public for far longer than they used to. In 1996, U.S. stock markets traded 7,322 listed companies; by 2017, that number had shrunk to fewer than 3,600.[[14]](#footnote-14) Historically, companies waited about eight years before launching an IPO. Nowadays, they are waiting about 11 years, and that appears to be on the rise. Partly because of a desire to avoid burdensome regulation, partly because they are awash in venture capital, partly because they rely far more on intangible assets like software, patents and intellectual property, these companies are staying private much longer than prior generations of innovative firms did. They often don’t need to go public in order to obtain the capital necessary to fuel their growth.[[15]](#footnote-15)

Consider the capital lifecycle of three leading companies. Amazon.com went public in 1997, only three years after its founding, at a total IPO valuation of $626 million. Much of its subsequent gains, to its recent total market value of $965 billion, have accrued to investors in the public stock market. Google went public in 2004, six years after its founding, at an initial market value of $28.8 billion. Today, it has a total market value of about $835 billion. Fewer of those cumulative gains have gone to public investors, simply because the company stayed private longer. Facebook’s IPO, in 2012, at an initial market value of $110.2 billion, was eight years into the company’s life. Today, its total market value is approximately $465 billion. Fewer still of those gains accrued to public investors.[[16]](#footnote-16)

The rise of private markets relative to public markets has another implication. If the restricted number of participants in a private market *don’t* hold differing viewpoints, then the price they set may end up distorted, often to the upside. When information networks are small, insular, and homogeneous, they can create a “diversity breakdown,” in which everyone with access to the same information thinks alike and interprets it the same way.

Thus every venture capitalist investing in Theranos Inc., the blood-testing company founded by Elizabeth Holmes, came to believe that its technology was a transformative breakthrough, rather than the fraud it turned out to be. This close-knit community of elite investors ended up valuing the company at $9 billion because each of them had privileged access to the same fragmentary and tightly guarded information and analyzed it the same way.[[17]](#footnote-17) Similar distortions have occurred in private valuations of Uber, Zenefits, and other leading venture-backed companies.[[18]](#footnote-18)

Or consider Tilray, Inc., a tiny Canadian producer of medical marijuana, whose stock reached a total market capitalization of $22 billion in mid-September 2018 even though the company had lost $18 million on only $17 million in total revenues in the first half of 2018. Small groups of speculators on Facebook and Twitter spread the word that the company would grow rapidly, and their message went viral. The stock more than doubled in three days, only to crash nearly as fast.[[19]](#footnote-19)

The rise and fall of bitcoin and other cryptocurrencies followed the same pattern, in which an elite group of evangelists and insiders set -- and reinforced -- a kind of insider price before the wider investing public chose to participate in a broader market.[[20]](#footnote-20)

Under such circumstances, free *public* markets must adjust toward an ultimately correct price from an initial point determined by smaller groups that have already organized around a narrow and rigid consensus. Such *private* markets, self-reinforced by waves of money and by information echoing across social-media networks, can lead to severe distortions of price.

To the best of my knowledge, neither Theranos nor bitcoin nor Tilray was held by any major index fund. The critics of indexing fail to mention that all these market distortions were driven by active, rather than passive, investors. For that matter, all the greatest bubbles in financial history were driven primarily or exclusively by active investors. Index funds were not invented until the early 1970s and took more than three decades to become popular. [The dot-com mania of the late 1990s](http://jasonzweig.com/from-the-archives-baloney-com/), the wild bull market of the Roaring Twenties that ended in the Great Crash of 1929, [the British railroad-stock boom and bust of the 1840s](http://www.dtc.umn.edu/~odlyzko/doc/hallucinations.pdf), the South Sea bubble of 1720, and every other market madness in financial history was driven primarily or exclusively by active investors, not by index funds.[[21]](#footnote-21)

So I don’t find it credible that index funds, by their very nature, interfere with the naturally efficient pricing imposed by active managers.

Like any industry under competitive threat, traditional active managers complain bitterly that index funds aren’t playing fair and are ruining the marketplace.

An excerpt from a recent blogpost exemplifies such critiques:

“When the market goes down, passive fund managers will be forced to sell stocks in order to track the index. This selling will force the market down further and force more selling by the passive managers. This dynamic will feed on itself and accelerate the market crash.”[[22]](#footnote-22)

That is a fallacy. A passive fund tracks its index by *holding* its investments, not by trading them! A passive fund neither buys a particular security because it has gone up in price nor sells that security because it has gone down in price. It buys more only to the extent that investors add new money to the fund; it sells only insofar as investors withdraw money from the fund. If a stock doubles in value overnight, but investors don’t put additional money into an index fund, then the fund will not buy a single share of that stock. If a stock loses half its market value, but investors don’t withdraw money from the index fund, then the fund will not sell a share of that stock.

In any event, the price for any publicly traded security is always set by the active managers who trade it, not by the passive funds that merely accept those prices -- irrespective of how much money may be flowing into or out of index funds.[[23]](#footnote-23)

There is selective evidence that exchange-traded funds in less-liquid areas of the financial markets, such as high-yield bonds, emerging markets, and bank loans or floating-rate notes, can create pricing distortions.[[24]](#footnote-24) In such specialized passive funds, assets that may not always trade continuously could turn out to be worth much less than their apparent value when investors want to cash out.[[25]](#footnote-25)

These critiques so far have not been extended to passive funds that hold stocks and bonds in general. At least in theory, it is plausible that index funds, if their present growth rates persist, could eventually reach the point at which they crowd out active stockpickers, undermining the efficiency of markets. But we are nowhere near such a tipping point. At last count, index funds hold only about 13% of U.S. stocks by total market value and account for approximately 5% of total trading volume.[[26]](#footnote-26)

A great irony of today’s market is that index funds, which have enabled tens of millions of investors to participate directly in the capitalist system, are largely the result of innovations spurred by a mutually owned, not-for-profit corporation, the Vanguard Group.[[27]](#footnote-27) Vanguard functions much like a consumers’ or producers’ cooperative. “In an act of spectacular altruism,” the firm’s founder, John C. Bogle,

“conceived Vanguard in 1974 as a kind of investment commune. The firm is owned not by a group of private shareholders who seek to maximize their own profits but by its fund investors themselves, who earn higher returns as Vanguard drives its costs lower.”[[28]](#footnote-28)

Although Vanguard practices a most unconventional form of capitalism and prices in the mutual-fund industry remained stubbornly high for decades,[[29]](#footnote-29) Vanguard’s competitors -- all run strictly for profit -- have finally risen to its challenge and are competing ferociously on price.

In 2016, *The Wall Street Journal* documented what it called “the race to zero,” or the rapid decline in the cost of investing in mutual funds.[[30]](#footnote-30) The sprinters crossed the finish line faster than we could have foreseen: Fidelity Investments now has a group of index funds that charge no fees whatsoever, a holding cost of zero for their investors.[[31]](#footnote-31) Several online discount brokers now permit their customers to trade individual stocks at zero commissions.[[32]](#footnote-32)

The ultimate challenge for individual investors in today’s financial markets is to take advantage of record-low costs, and record-high quality and volume of information, *without* becoming a short-term trader.

Investing has become effectively free. That is unprecedented in the history of financial markets -- and also a hazard for the unwary. The ability to trade cheaply and to hold funds without paying fees can trigger excessive trading among the overconfident and underqualified.

It’s worth pausing for a moment to savor how much better today’s investing environment is than it was a generation ago.

When I bought my first stock as a teenager in 1976, I had to pay for a long-distance call to my parents’ stockbroker, who charged me a commission of roughly 5% to buy 100 shares. Every day, I had to check in the newspaper to see what its price had done the day before. Not even our public library could supply me with the company’s financial statements. The company did, but only after I sent in a self-addressed stamped envelope, and the financial reports took weeks to arrive. One day, I opened the mail and discovered, to my shock, that our broker had inadvertently sold the stock the previous week without even informing me. I promptly bought it back, then sold it for good a few weeks later. All told, I made a gross profit of more than 50%, although commissions -- and telephone bills! -- ate up nearly half my gains.[[33]](#footnote-33)

If you made that same trade today, it would be instantaneous and cost you next to nothing. You would have access to the fundamental financial information about the company that the world’s biggest investors have -- and, if you chose, you could see it at the same time. At any given second, you can know the exact price of the stock, whether the company has filed any updated disclosures, and every bit of news anywhere in the world that might affect its prospects. Only in tracking the shortest-term fluctuations of stock prices do many big brokers and other market participants still retain an indisputable informational advantage.

That puts patient, prudent individual investors in the best competitive position they have ever held.

Years ago, I wrote that

“...the game remains the same [as it was in 1940]. The individual investor is still situated at the very bottom of the food chain, a speck of plankton afloat in a sea of predators.”[[34]](#footnote-34)

I am no longer so sure of that. Even though stocks, bonds, and other financial assets are overvalued by historical stands, the tools for investing in them have never been cheaper to hold or easier to use. An individual investor who diversifies simply and prudently, who adds money steadily along the way, and who never sells unless he or she has an urgent need for cash, can amass wealth over the long term at a fraction of the costs incurred by the world’s biggest investors. An individual investor who chooses to hold -- rather than to trade -- investments is quite likely, in my opinion, to outperform the vast majority of other investors, including the world’s leading professionals.

“Time arbitrage” -- the ability to be more patient, to invest with horizons measured in years and decades rather than in weeks or months -- is the greatest asset an individual investor has. And it has never been cheaper, simpler, and ultimately more lucrative, to practice.

Those who try to beat the professionals at their own game of fast trading, however, are extremely likely to be sorry. There, individuals are carrying knives to a gunfight, as Wall Street’s biggest institutions can execute trades in millionths of a second based on momentary inefficiencies that only the fastest computers can identify.

As Benjamin Graham, Warren Buffett’s mentor and the greatest financial analyst of the 20th century, said:

“I am convinced that an individual *investor* with sound principles, and soundly advised, can do distinctly better over the long pull than a large institution….Most true bargains are not available in large blocks; by this very fact the institutions are well-nigh eliminated as competitors of the bargain-hunter.”[[35]](#footnote-35)

Patience is the ultimate virtue in investing; it is also the ultimate luxury, and in today’s markets it is far more affordable to individuals than to institutions.

Young investors who have endured both the stock-market collapse of 2000-2002 and the financial crisis of 2008-2009 appear to be significantly more conservative and reluctant to invest in stocks than older investors have been.[[36]](#footnote-36) Much as their grandparents were pummeled into risk aversion by the Great Depression, these young investors are likely to require considerable coaxing if they are to accumulate the significant wealth that investing in the stock market can produce over the long term.[[37]](#footnote-37) Fortunately, the rock-bottom cost and ready convenience of today’s investing innovations will lower the barriers for these young investors to enter the market.

Modern financial technology has put owning a stake in the capitalist economy within everyone’s reach. For that reason alone, the future is bright.

1. Inigo Fraser-Jenkins, “The Silent Road to Serfdom: Why Passive Investing is Worse Than Marxism” (London: Sanford C. Bernstein, Fund Management Strategy research paper, Aug. 23, 2016). [↑](#footnote-ref-1)
2. I will use the terms “index” and “passive” funds interchangeably throughout this paper. [↑](#footnote-ref-2)
3. ICI Fact Book 2018, <http://www.icifactbook.org/ch6/18_fb_ch6>, Fig. 6.7. [↑](#footnote-ref-3)
4. Jason Zweig, “[Financiers, Heal Thyselves,](http://jasonzweig.com/financiers-heal-thyselves/)” *The Wall Street Journal,* Feb. 2, 2018. [↑](#footnote-ref-4)
5. Michael Mauboussin et al., “[Alpha and the Paradox of Skill](https://research-doc.credit-suisse.com/docView?language=ENG&format=PDF&source_id=em&document_id=805456950&serialid=LsvBuE4wt3XNGE0V%2B3ec251NK9soTQqcMVQ9q2QuF2I%3D),” Credit Suisse, Global Financial Strategies research report, July 15, 2013; see also Michael J. Mauboussin, [*The Success Equation: Untangling Skill and Luck in Business, Sports, and Investing*](https://amzn.to/2xQqSKu) (Boston: Harvard Business School Publishing, 2012). [↑](#footnote-ref-5)
6. The academic literature on this topic is so extensive that I can only summarize it here, but I believe my summary is fair. A selection of the papers on the relative performance of active management includes: Alfred Cowles III, “[Can Stock Market Forecasters Forecast?](https://cowles.yale.edu/sites/default/files/files/pub/misc/cowles-forecasters33.pdf)” (1933); Edward D. Allen, “[Study of a Group of American Management-Investment Companies, 1930-36](https://www.jstor.org/stable/2349931)” (1938); George Wilber Moffitt Jr., “[Management Achievement of Open-End Investment Companies](https://www.jstor.org/stable/2350326)” (1952); Irwin Friend et al., “[A Study of Mutual Funds, Prepared for the Securities and Exchange Commission by the Wharton School of Finance and Commerce](http://3197d6d14b5f19f2f440-5e13d29c4c016cf96cbbfd197c579b45.r81.cf1.rackcdn.com/collection/papers/1960/Wharton_Chapter_1B.pdf)” (1962); Michael C. Jensen, “[The Performance of Mutual Funds in the Period 1945-1964](https://scholar.google.com/scholar?cluster=10307764130010680873&hl=en&as_sdt=0,7)” (1968); Burton C. Malkiel, “[Returns from Investing in Equity Mutual Funds 1971 to 1991](https://scholar.google.com/scholar?cluster=14560854280082856615&hl=en&as_sdt=0,7)” (1995); Mark M. Carhart, “[On Persistence in Mutual Fund Performance](https://scholar.google.com/scholar?cluster=1464485821404261377&hl=en&as_sdt=0,7)” (1997); Eugene F. Fama and Kenneth R. French, “[Luck versus Skill in the Cross-Section of Mutual Fund Returns](http://mba.tuck.dartmouth.edu/bespeneckbo/default/AFA611-Eckbo%20web%20site/AFA611-S8C-FamaFrench-LuckvSkill-JF10.pdf)” (2010); S&P Dow Jones Indices, “[Does Past Performance Matter?](https://us.spindices.com/documents/spiva/persistence-scorecard-march-2018.pdf?force_download=true)” (2018). Cowles’s data commence in 1928 for most of his sample; Fama and French’s data end in 2006; S&P Dow Jones Indices updates its data semi-annually. Across nine decades and thousands of portfolios, the consensus of these researchers is that roughly half of actively managed funds outperform before expenses (and that thereby more than half underperform after those costs) and that superior performance in one period is not predictive of subsequent returns. Basic economic logic suggests that any other result is unsustainable; see William F. Sharpe, “[The Arithmetic of Active Management](https://web.stanford.edu/~wfsharpe/art/active/active.htm)” (1991). [↑](#footnote-ref-6)
7. See, for instance, Martijn Cremers et al., “Challenging the Conventional Wisdom on Active Management: A Review of the Past 20 Years of Academic Literature on Actively Managed Mutual Funds,”

   <https://ssrn.com/abstract=3247356>. [↑](#footnote-ref-7)
8. These are net figures, accounting for additions, redemptions, and exchanges. Source: The Vanguard Group via BofA Merrill Lynch. [↑](#footnote-ref-8)
9. Fraser-Jenkins, op cit., p. 7. [↑](#footnote-ref-9)
10. Jason Zweig, “Are Index Funds Eating the World?” *The Wall Street Journal,* Aug. 26, 2016, <http://jasonzweig.com/are-index-funds-eating-the-world/>. [↑](#footnote-ref-10)
11. See, for example, James Surowiecki, *The Wisdom of Crowds: Why the Many Are Smarter than the Few and How Collective Wisdom Shapes Business, Economies, Societies, and Nations* (New York, Doubleday, 2004); Scott E. Page, *The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools, and Societies* (Princeton, NJ: Princeton University Press, 2007). [↑](#footnote-ref-11)
12. F.A. Hayek, “The Use of Knowledge in Society,” *American Economic Review,* vol. 35, no. 4 (Sept. 1945), pp. 519-520. [↑](#footnote-ref-12)
13. See Kirsten Grind, “Mutual Funds Flail at Valuing Hot Startups Like Uber,” *The Wall Street Journal,* Oct. 29, 2015, <https://www.wsj.com/articles/mutual-funds-flail-at-valuing-hot-startups-like-uber-1446174018>. [↑](#footnote-ref-13)
14. Jason Zweig, “Stock Picking Is Dying Because There Are No More Stocks to Pick,” *The Wall Street Journal,* June 23, 2017, <http://jasonzweig.com/stock-picking-is-dying-because-there-are-no-more-stocks-to-pick/>. [↑](#footnote-ref-14)
15. See Jonathan Haskel and Stian Westlake, *Capitalism without Capital: The Rise of the Intangible Economy* (Princeton: Princeton University Press, 2017). [↑](#footnote-ref-15)
16. Michael J. Mauboussin et al., “The Incredible Shrinking Universe of Stocks,” Credit Suisse, Global Financial Strategies research report, March 22, 2017, <http://www.cmgwealth.com/wp-content/uploads/2017/03/document_1072753661.pdf>. [↑](#footnote-ref-16)
17. See John Carreyrou, *Bad Blood: Secrets and Lies in a Silicon Valley Startup* (New York: Knopf, 2018). [↑](#footnote-ref-17)
18. See, for example, <https://www.wsj.com/articles/uber-ceo-travis-kalanick-resigns-1498023559> and <https://www.wsj.com/articles/highly-valued-startup-zenefits-runs-into-turbulence-1447375220>. [↑](#footnote-ref-18)
19. Jacquie McNish and Vipal Monga, “Wall Street’s Marijuana Madness: ‘It’s Like the Internet in 1997’,” *The Wall Street Journal,* Sept. 23, 2018, <https://www.wsj.com/articles/wall-streets-marijuana-madness-its-like-the-internet-in-1997-1537718400>. [↑](#footnote-ref-19)
20. Rob Copeland, “Olaf Carlson-Wee Rode the Bitcoin Boom to Silicon Valley Riches. Can He Survive the Crash?,” *The Wall Street Journal*, Sept. 11, 2018, <https://www.wsj.com/articles/olaf-carlson-wee-rode-the-bitcoin-boom-to-silicon-valley-riches-can-he-survive-the-crash-1536681364>. [↑](#footnote-ref-20)
21. See Jason Zweig, “And Now For Something on Index Funds,” Apr. 13, 2017, <http://jasonzweig.com/and-now-for-something-on-index-funds/>. [↑](#footnote-ref-21)
22. James Rickards, “Free-Riding Investors Set up Markets for a Major Collapse,” Daily Reckoning, September 24, 2018, <https://dailyreckoning.com/free-riding-investors-set-up-markets-for-a-major-collapse/>. [↑](#footnote-ref-22)
23. For further explanation, see Laurence B. Siegel, “Index Fund Silliness: Indexing Doesn’t Distort Anything,” August 2017, <https://larrysiegeldotorg.files.wordpress.com/2017/09/siegel_index-fund-silliness_final.pdf>. [↑](#footnote-ref-23)
24. See, for instance, Jason Zweig, “‘Junk’ ETFs: Tread Lightly,” The Wall Street Journal, March 16, 2012, <https://www.wsj.com/articles/SB10001424052702303863404577285501263960594>. [↑](#footnote-ref-24)
25. That is especially likely to be true among exchange-traded funds that have grown rapidly while holding assets that are traded thinly, creating the potential for pricing discontinuities that can trigger a “liquidity mismatch” if investors ask for their money back. Even here, the evidence is more speculative than empirical, although some of these structures have not yet been fully tested under adverse market conditions. [↑](#footnote-ref-25)
26. Jason Zweig, “Do Index Funds Cost 100 Times as Much as You Think?” *The Wall Street Journal,* Apr. 20, 2018, <http://jasonzweig.com/do-index-funds-cost-100-times-as-much-as-you-think/>; James J. Rowley Jr. et al., “Setting the Record Straight: Truths about Indexing,” Vanguard Research, January 2018, Fig. 8, <https://personal.vanguard.com/pdf/ISGBEL.pdf>. [↑](#footnote-ref-26)
27. For more on the history of Vanguard, see John C. Bogle, “Saving a Company, Building a Colossus, Preserving a Culture,” <http://johncbogle.com/wordpress/wp-content/uploads/2006/02/65th-Anniversary-7-9-16.pdf>. [↑](#footnote-ref-27)
28. Jason Zweig, “Here Come the Bogleheads,” *Money* magazine, Sept. 2001, <http://jasonzweig.com/a-golden-oldie/>. [↑](#footnote-ref-28)
29. For the long history of high fees on mutual funds, see Kenneth R. French, “The Cost of Active Investing,” *Journal of Finance,* August 2008, <http://faculty.chicagobooth.edu/john.cochrane/teaching/35150_advanced_investments/French_Presidential_Address.pdf>. [↑](#footnote-ref-29)
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32. That is different from being able to trade at zero cost. Customers at these firms may pay “spreads,” or embedded transactions costs, considerably higher than those at other firms -- leading the total cost of trading to be higher, not lower. See, for example, <https://seekingalpha.com/article/4205379-robinhood-making-millions-selling-millennial-customers-high-frequency-traders>. *Caveat emptor.* [↑](#footnote-ref-32)
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